

Compensatory Mitigation Plan

Kaskaskia River Regional Port CAP Section 107 Study

July 2024

1.0 Overview

This document presents the compensatory mitigation plan for unavoidable habitat impacts associated with the Kaskaskia River Regional Port CAP Section 107 Study project. This plan addresses only compensatory mitigation work and not the sequence of other activities performed during project planning to avoid, minimize, rectify, or reduce habitat impacts from each project alternative (see Engineer Regulation (ER) 1105-2-100, Section C-1(e)(8)). Details of those sequence actions are included in the plan formulation and environmental consequences sections of the study's main report and environmental compliance document, and those actions are incorporated into the mitigation objectives of this plan. The planning work performed to document those sequencing actions is complete and led the team to the need to develop a compensatory habitat mitigation plan for unavoidable impacts to fish and wildlife resources. This document details the work performed, including coordination, plan formulation, and environmental compliance, to develop the compensatory habitat mitigation plan.

2.0 Requirements

The authority and requirements for compensatory mitigation are founded in Federal laws and regulations. The legal foundation for mitigation for ecological resources includes the Clean Water Act, various Water Resources Development Acts, and other environmental laws. These laws are implemented and administered through rules, guidance, regulations, and policies issued by Executive Branch agencies.

The relevant laws and regulations specific to compensatory mitigation planning for Corps of Engineers civil works projects are listed in the References section of this document. The specific procedures followed to develop this compensatory habitat mitigation plan are found in ER 1105-2-100, Appendix C. Other forms of mitigation, such as plans for cultural resources conservation or induced flood damages, may also be required for a project. Those types of mitigation requirements are not directly related to fish and wildlife habitat impacts and are not covered in this plan.

Compensatory mitigation is the “restoration (re-establishment or rehabilitation), establishment, enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved” (see 40 CFR 230.92). It is the policy of the Corps of Engineers civil works program, and in accordance with Section 906 of WRDA 1986, as amended, to demonstrate that impacts to all significant ecological resources, both terrestrial and aquatic, have been avoided and minimized to the extent practicable, and that any remaining unavoidable impacts have been compensated to the extent possible. Section 906(d) of WRDA 1986, as amended, requires functional assessments to be performed to define ecological impacts and to set mitigation requirements for impacted habitats. Corps of Engineers policy in ER 1105-2-100, paragraph C-3(e), requires the use of a habitat-based methodology, supplemented with other appropriate information, to describe and evaluate the impacts of the alternative plans, and to identify the mitigation needs.

3.0 Coordination and Collaboration

Development of this plan involved extensive coordination and collaboration with the project's non-federal sponsor, state and federal natural resource agencies, landowners, and the public. Public input was sought during interagency meetings, public scoping meetings, and during review of the draft report and environmental compliance document. Comments from the public related to habitat impacts and mitigation included protecting migratory bird populations, effects on local avian populations pertaining to hunting, and concern with maintaining access for recreational use at sites on lands proposed for project implementation. Discussions with area landowners helped characterize local site conditions and gauge opportunities for potential mitigation work in these areas. The main report contains additional details of the study's public involvement efforts (see Section #7.2.5).

An interagency team met throughout the study and resource agencies contributed expertise and information to support the identification of impacts and the development of compensatory mitigation plan alternatives. The views of resource agencies, including the U.S. Fish and Wildlife Service and Kaskaskia River Port District (KRPD), and others were considered in the development of the draft plan and the final recommended plan. These organizations will be offered an opportunity to continue to play a role in the design and implementation phases of the mitigation work if the project is authorized and funded.

The participating agencies are listed below. An early interagency coordination meeting was held to comply with the provisions of the Water Resources Reform and Development Act of 2014 Section 1001. The meeting afforded agencies an opportunity to learn about the project and to provide initial input into the study. These agencies will also be invited to the District's annual consultation meeting for mitigation project coordination and reporting. There were no cooperating agencies for this study.

- Kaskaskia Regional Port District (KRPD) (non-federal sponsor)
- Illinois Department of Resources (IDNR)
- U.S. Coast Guard (USCG)
- U.S. Fish and Wildlife Service
- Illinois Department of Transportation (IDOT)

4.0 Ecological Resources

The Kaskaskia River Regional Port CAP Section 107 Study project is in the Lower Kaskaskia HUC12 watershed. From a habitat standpoint the area is characterized as the largest bottomland hardwood forest within Illinois and is located along the Kaskaskia River between Carlyle Lake and Fayetteville. The vast majority of the state's high quality southern flatwoods forest occurs within this corridor. The river is an important habitat for waterfowl, migratory birds, and plants associated with wetland habitats.

The interagency team investigated the habitat resources found in the project area. The team collected information from existing data sources and conducted field visits and surveys. Sources of habitat data include information from resource agencies, published reports, agency records, and field investigations. Table 1 describes how each data source was used in developing the mitigation plan.

Table 1 - Data Sources

Year	Source of Information	Information	Use in Mitigation Planning
1983	USFWS	HSI Models: Black-Capped Chickadee	Used to Calculate Net AAHUs

Year	Source of Information	Information	Use in Mitigation Planning
2001	IDNR	Kaskaskia River Basin Study	Inventory and critical trend analysis used to enhance nature protection and outdoor recreation.
2002	Southwestern Illinois Research Conservation and Development	Ecological approaches to issues and opportunities in the Kaskaskia River Watershed.	Characterize significance and scarcity of habitat resource.
2020	KRPD	KRPD Master Plan	Addresses existing conditions and future needs for KRPD.
2020	Interagency Team	Interagency field visit report	Inventory and forecast site resources and conditions. Data for models.

The project area includes bottomland hardwood. Table 2 shows the habitat resources in the project area, the quantity of the resource, the type of impact to the resource, and the significance of the resource. These resources are recognized as significant across institutional, public, and technical perspectives. The main feasibility report discusses these three significance factors in detail. Table 2 summarizes the resource significance from a qualitative perspective based upon the interagency team's assessment. Significance assessments assist teams in understanding the ecosystem impacts of the project and the linkages of the resources to other parts of the system or watershed.

Table 2 - Ecological Resources

Habitat	Quantity	Type of Impact	Significance of Resource
Bottomland Hardwood Forest	12.8 acres	Tree Removal	Suitable habitat for local and migratory terrestrial species. Provides habitat for federal and state listed species.

The Kaskaskia River flows through the project area (see Figure 1). The river has a peak flow of 7,000 cubic feet per second (cfs). It provides in-stream habitat for a variety of fish, mollusks, amphibians, and reptiles. Other wildlife, including mammals, birds, and reptiles, use the river for watering and foraging. Several fish species use the river for spawning and the adjacent habitats provide nursery areas for these and other commercially and recreationally important fish species.

Part of the project area is bottomland hardwood forest. This bottomland hardwood forest falls directly inside of the dredge disposal #2 area (see Figure 2). The bottomland hardwood forest hosts a diverse community of vegetation including grasses, sedges, and trees. The area provides high value avian foraging habitat as well as habitat for federally listed bat species. The project would directly remove bottomland hardwood habitat as part of the structural features of the project.

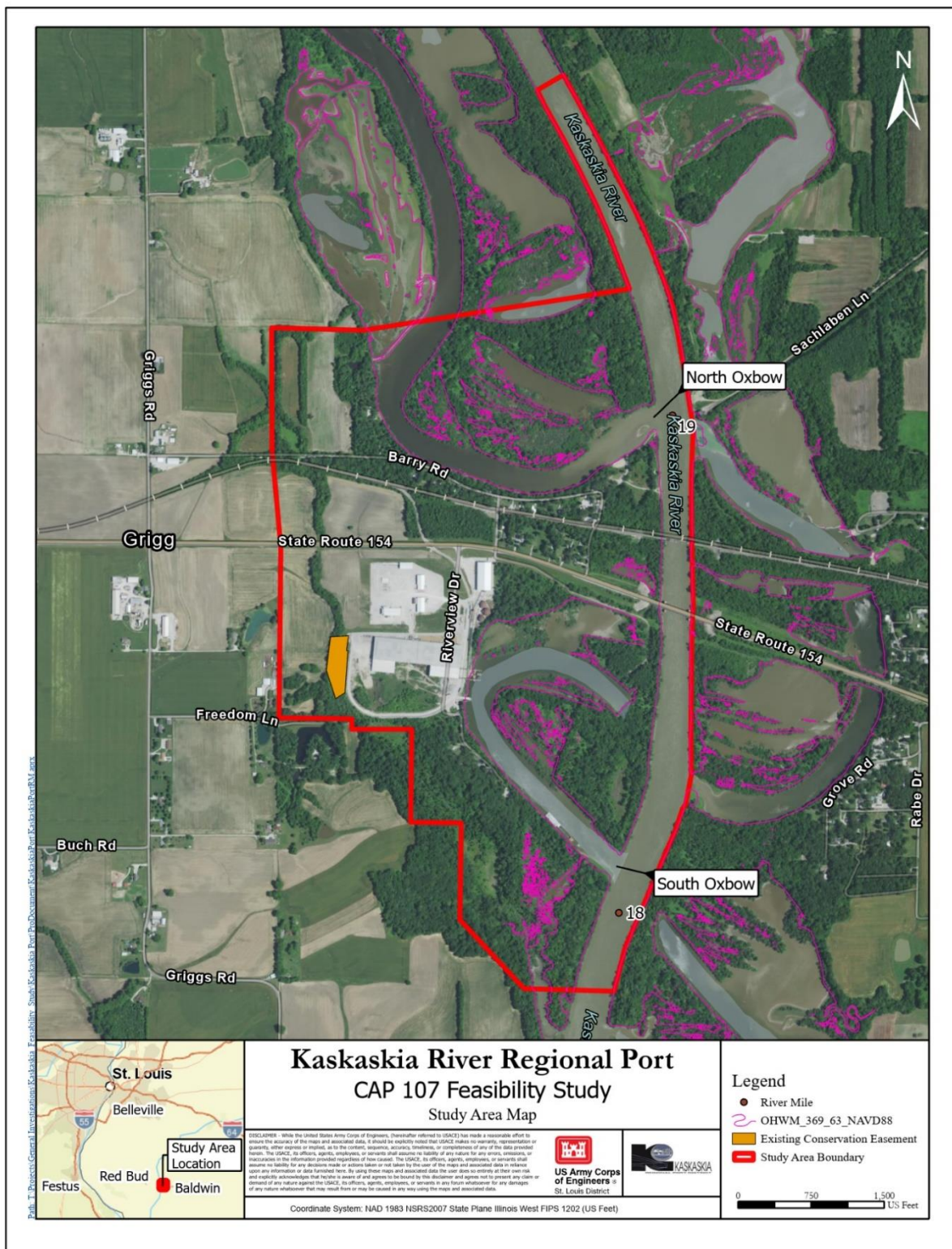


Figure 1- Study Area showing the Kaskaskia River flowing through the project area.

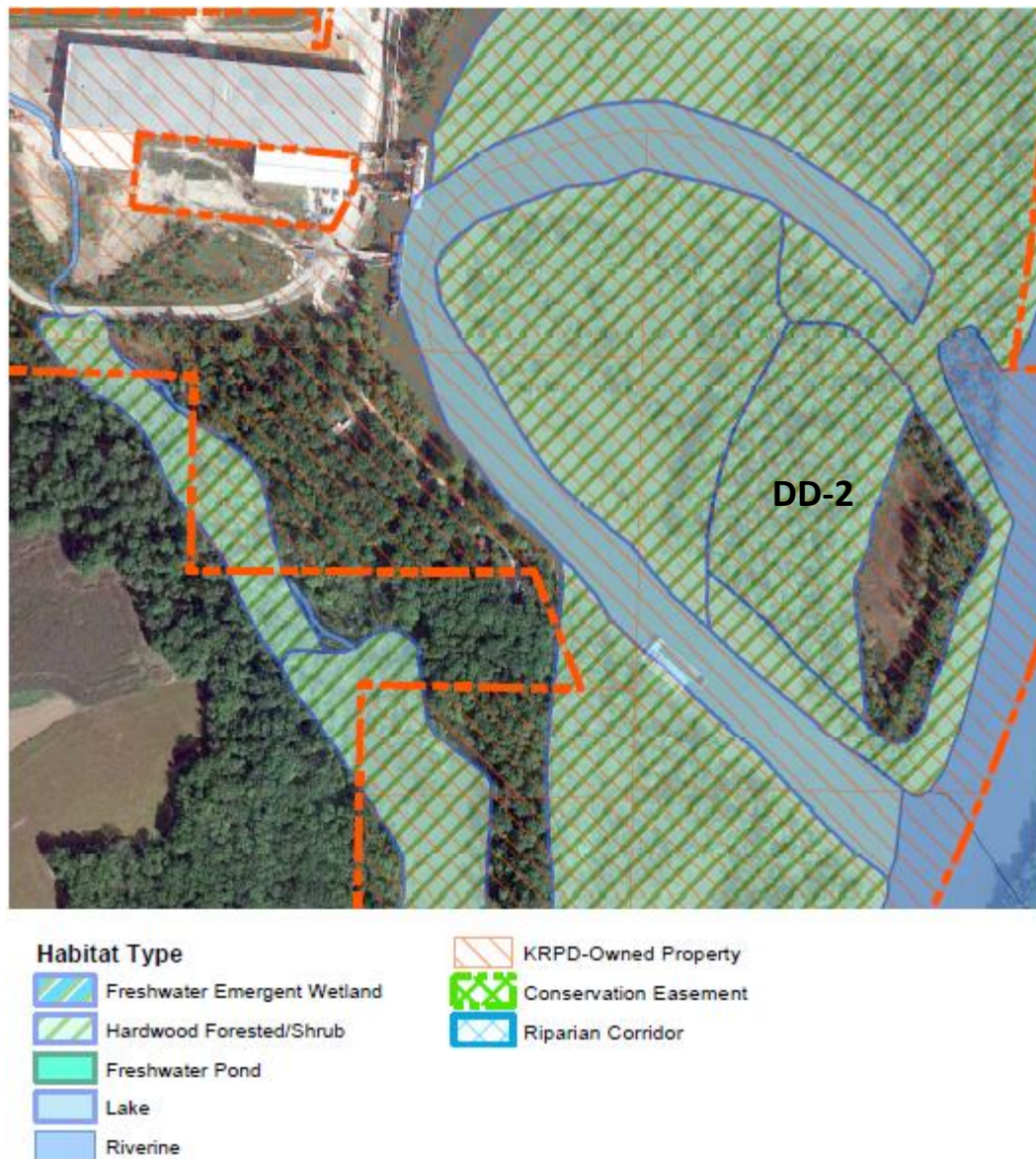


Figure 2 – Habitat in the Study Area

5.0 Significant Net Losses

Based upon the type(s) of habitat(s) in the project area the interagency team determined that the Black-capped Chickadee model would be an appropriate tool to assess the project's impacts on wildlife habitat. The model is certified for use by the Corps of Engineers Ecosystem Restoration National Planning Center of Expertise. Model outputs measure habitat value in average annual habitat units (AAHU). The tool is also suitable for assessing mitigation potential at alternative mitigation sites in the watershed.

Table 3 displays the model output results for each of the impacted habitat types. The impacts are quantified using AAHUs. Additional details on the use of the model and the results of the analysis are presented in the feasibility report and environmental compliance document and the HEP analysis.

Table 3 - Unavoidable Fish and Wildlife Habitat Impacts

Habitat Type	Quantity (acres or other)	Quantity (habitat units)
Bottomland Hardwood Forest	12.85 acres	-6 AAHU

Table 4 presents additional information characterizing the significance of the resources from a national, regional, and state perspective. The interagency assessment of project impacts determined that the habitat resources in the project area are significant. This determination is based upon the factors of significance and the magnitude of unavoidable project impacts.

Table 4 - Ecological Resource Significance – Is the Resource Scarce or Unique at Various Levels?

Habitat Type	National Significance	Regional Significance	State Significance
Bottomland Hardwood Forest	Two hundred years ago, magnificent bottomland forests covered almost thirty million acres across the Southeastern United States. Today, only about forty percent of that area still supports these productive and unique ecosystems. (EPA, 2024)	“The largest bottomland, hardwood forest within Illinois, at 43,000 acres, is located along the Kaskaskia River between Carlyle Lake and Fayetteville. (Worthen, 2002).”	One tract within this forest is the single largest contiguous tract in Illinois (7,300 acres) and is approximately two miles wide at certain points. (Worthen, 2002).

From a planning-perspective the ecological significance of the habitats is useful in defining the goals and objectives of the compensatory mitigation plan.

6.0 Mitigation Planning Objectives

The project includes mitigation sequencing actions employed during the development and refinement of details for each alternative plan. These sequencing actions include steps to avoid, minimize, rectify, and reduce/eliminate habitat impacts for each alternative. Compensatory mitigation was used as the overall mitigation plan for the project. The need for compensatory mitigation is driven by the remaining unavoidable impacts to significant ecological resources.

The goal of this mitigation plan is to fully compensate for the unavoidable impacts to significant ecological resources that would occur with project implementation. The objectives of the mitigation plan are defined by the results of the habitat impact assessment model using quantified units. The same habitat assessment model was used to estimate potential project impacts and potential outputs of mitigation measures. The objectives of this mitigation plan are:

- Compensate for the loss of 12.8 acres of bottomland hardwood forest habitat (6 average annual habitat units) in the Kaskaskia River basin.

Other factors may influence planning objectives and the development of strategies, measures, and alternative plans. These may even play a role in plan selection depending on specific project circumstances and opportunities. Some of these factors are based on legal requirements and policies

and others are derived from scientific or technical standards. For example, acquisition of lands or interests in lands for mitigation must be acquired before construction of the project commences or concurrently with acquisition of lands and interests in lands for other project purposes; and the physical construction of the mitigation work is required to be carried out before or concurrently with project construction (see Section 906(a) of WRDA 1986, as amended). This introduces an implementation time factor to consider later in plan evaluation and selection. Another example, from a scientific perspective, larger contiguous land tracts may offer better habitat value for wildlife compared to dispersed smaller areas. This may influence site selection and land considerations for a mitigation project.

7.0 Land Considerations

The interagency team assessed various lands in the study area for potential use as a site for compensatory mitigation work. Parcels within the watershed and capable of supporting the types of habitat(s) impacted by the proposed project were identified. Geographic information system tools were utilized to systematically identify tracts of suitable size and habitat support characteristics. An initial qualitative assessment of mitigation potential was also part of the site analysis. Details of each land type identified and assessed are discussed below.

- State land. A state Wildlife Management Area is located in the watershed within the vicinity of the project. Most of the management area is impounded and operated to benefit migratory waterfowl populations.
- Federal land. There are no Federal lands in the watershed that would be suitable for use in a mitigation project.
- Other trust land. Two large tracts of trust lands are located in the watershed. The Land Learning Foundation owns and manages an In-Lieu fee site. The other site is Shepgarten mitigation bank which is operated by Wetlands Forever Inc. Both of these options are of suitable size and offer conditions that could support the habitat types necessary for this mitigation project.
- Private land. Within the watershed there are dozens of sites held in private ownership that are potentially suitable in size and site conditions for mitigation work. These areas vary greatly in conditions and current uses. Some are actively used in agriculture and others are converting to more suburban uses while others are undeveloped. The undeveloped sites further vary in uses with some serving as recreational lands, hunting lands or forestry investments. These lands are considered potential mitigation areas and can be further evaluated for use in mitigation work in collaboration with the resource agencies and the individual landowners.

8.0 Mitigation Strategies

Planning strategies are different means employed to develop an alternative plan or plans to achieve a project goal. The use of one or more strategies helps teams focus on an approach to developing a plan. For mitigation planning work, strategies may range from the purchase of mitigation bank credits to the construction of a project or projects to achieve the objectives and compensate for unavoidable habitat impacts. Strategies may also involve different approaches to site selection such as the use of public lands or identifying contiguous sites to enhance wildlife corridors or expand wildlife populations. In addition, Section 2036(c) of WRDA 2007, as amended, requires to the Corps of Engineers to consider mitigation banks and in-lieu fee programs where appropriate. Consideration of

these options as mitigation strategies may be helpful when available. The strategies considered for planning this mitigation project are described below.

- Purchase of mitigation bank credits. Mitigation banks sell credits for mitigation work performed at an approved site. The banks are approved and legally bound through banking instruments that hold the operators to certain standards of performance and reporting. The use of mitigation banks for a project may offer advantages to the government and non-federal sponsor by reducing performance risk and eliminating project specific requirements for operations and maintenance work and the development of monitoring and adaptive management plans.
- Purchase of in-lieu fee program credits. In-lieu fee programs are established by state or local natural resource management agencies and approved by the Corps of Engineers and U.S. Environmental Protection Agency to accept funds for future mitigation work. The programs are approved to implement either specific or general wetland or other aquatic resource development projects. Programs must meet the requirements that apply to an offsite mitigation effort and provide adequate assurances of success and timely implementation. A formal agreement between the program sponsor and the agencies, like a banking instrument, defines the conditions under which the use of the program is considered appropriate. Using an in-lieu-fee program for a project's mitigation needs may offer advantages to the government and non-federal sponsor by reducing performance risk and eliminating project specific requirements for operations and maintenance work and the development of monitoring and adaptive management plans.
- Construction of a mitigation project. The government and non-federal sponsor may choose to construct a mitigation project. This construction strategy offers some potential advantages in tailoring a project to specific needs or locations. In addition, the partners may bring special expertise to the project gained from previous work on similar projects in the area.

9.0 Identify Measures and Formulate Alternative Mitigation Plans

Management measures are actions or activities that work towards accomplishing planning objectives. Each measure is linked to one or more stressors or drivers in a conceptual ecological model. A measure may stand alone as a single activity that serves as an alternative plan. Two or more individual measures may be combined to form an alternative plan.

- Measure 1 – Purchase mitigation bank credits. This measure addresses the mitigation objectives through the purchase of in-kind credits from an approved mitigation bank located in the basin.
- Measure 2 – Purchase in-lieu fee program credits. This measure addresses the mitigation objectives through the purchase of in-kind credits from an approved in-lieu fee program with credits available in the basin.
- Measure 3 – Plant suitable bottomland hardwood vegetation, such as the root prune method. This measure addresses the mitigation objectives by transplanting vegetation suitable for growth in bottomland hardwood habitat.

A qualitative analysis of the potential effectiveness of each measure towards achieving the mitigation planning objectives was performed. Table 5 summarizes the results of the initial screening of potential

mitigation measures. After the effectiveness screening the team retained three measures for further consideration and potential combinability into alternative plans.

Table 5 – Initial Screening of Mitigation Measures

Measure	Screening Analysis	Screening Result
Measure 1	Likely to meet mitigation objective	Carried forward for further analysis
Measure 2	Likely to meet mitigation objective	Carried forward for further analysis
Measure 3	Likely to partially meet mitigation objective.	Carried forward for further analysis

Each measure was further assessed to determine the potential to combine it with other measures to form alternative plans. This assessment determined if a measure could stand alone as a plan and whether the measure had any restrictions that would prevent its combination with other measures. Results of the assessment are shown in the table below.

Table 6 - Mitigation Measure Combinability Assessment

Measure	Potential to Stand Alone as a Plan?	Potential to Combine with Other Measures?	1	2	3
Measure 1	yes	yes	n/a	yes	yes
Measure 2	yes	yes	yes	n/a	yes
Measure 3	yes	yes	yes	yes	n/a

The measures were then combined into an array of alternative plans aligned with the mitigation planning strategies. A no action alternative is included as a basis for comparison as well as meeting the requirements of the National Environmental Policy Act.

- No Action Alternative. Under this scenario no mitigation work would be performed, and the structure, functions and values of project impacted habitats would be permanently lost. The alternative is retained for purposes of a baseline comparison against other action alternatives.
- Alternative 1 – Purchase Mitigation Bank Credits. Shepgarten Mitigation Bank is an approved bank via the Regulatory Program. On August 1st, 2024, Shepgarten was contacted for availability of mitigation bank credits and the cost per acre. The retail price per acre was \$65,000.00 for a total of 20 credits. With the large amount being purchased, Shepgarten offered a 10% discount bringing the cost per acre to \$58,000.00 for a total of \$1,170,000.00.
- Alternative 2 – Purchase Credits From An Approved In-Lieu Fee Program. Land Learning Foundation is an approved in-lieu fee program instrument via the Regulatory Program. On August 1st, 2024, Land Learning Foundation was contacted for availability of in-lieu fee credits and the cost per acre. The retail price per acre was \$50,000.00 for a total of 20 credits amounting to \$1,000,000.00.
- Alternative 3 – Construct A Mitigation Project. Restore agricultural sites in the vicinity of the Kaskaskia River near KRPD2. Construction would involve mechanically grading and

contouring approximately 19.4 acres of former row crop land adjacent to the river to an elevation supporting bottomland hardwood forest. Vegetation would then be planted on the site and the area treated to prevent encroachment of invasive plant species. The project would produce an estimated 6 average annual habitat units. This alternative would require up to 10 years of monitoring and adaptive management.

10.0 Costs of Mitigation Plan Increments and Alternatives

Cost estimates were prepared for each alternative. The team used various information sources to estimate the costs of the alternatives. Available information included records of recent mitigation bank credit and in-lieu fee program credit sales and details from recently completed nearby ecosystem projects. The study team also considered other cost factors such as site access, fuel and equipment, and the availability of plant materials. Table 7 displays the costs and outputs for each alternative plan.

Table 7 – Estimated Costs of Alternative Plans

Alternatives	Cost	Plan Outputs
No Action	\$0	0
Alternative 1 – Purchase mitigation bank credits	\$1,170,000.00	6 AAHU
Alternative 2 – Purchase in-lieu fee program credits	\$1,000,000.00	6 AAHU
Alternative 3 – Construct a mitigation project or projects	\$885,371.76	6 AAHU

11.0 Incremental Costs

Cost effectiveness analysis is conducted on alternative compensatory mitigation plans to ensure the least cost alternative is identified for each level of output. Subsequently, incremental cost analysis is done on the cost effective plans to reveal changes in costs as output levels increase and allow for an assessment of whether the increase in output is worth the additional cost. Determination of the final compensatory mitigation plan will utilize these results to identify and describe the least cost plan.

The outputs of different mitigation alternatives may be similar. Each alternative plan should be appropriately scaled to meet or closely meet the mitigation planning objective based upon unavoidable ecological impacts generally expressed in habitat units. Some variations in alternative plan outputs and costs may be expected because of differences in site conditions or other factors at various project locations under consideration.

IWR Planning Suite software was used to analyze and compare plans. The software uses information about the mitigation measures and alternative plans including combinability and exclusions, costs, and outputs. The team establishes the parameters and enters cost estimates and plan outputs into the software. The resulting information is used to evaluate alternatives and identify a suite of cost effective solutions or plans. Figure 3 displays the results of the cost effectiveness evaluation for all the alternative plans. Figure 4 shows only the cost effective plans and Figure 5 displays the incremental cost analysis of best buy plans.

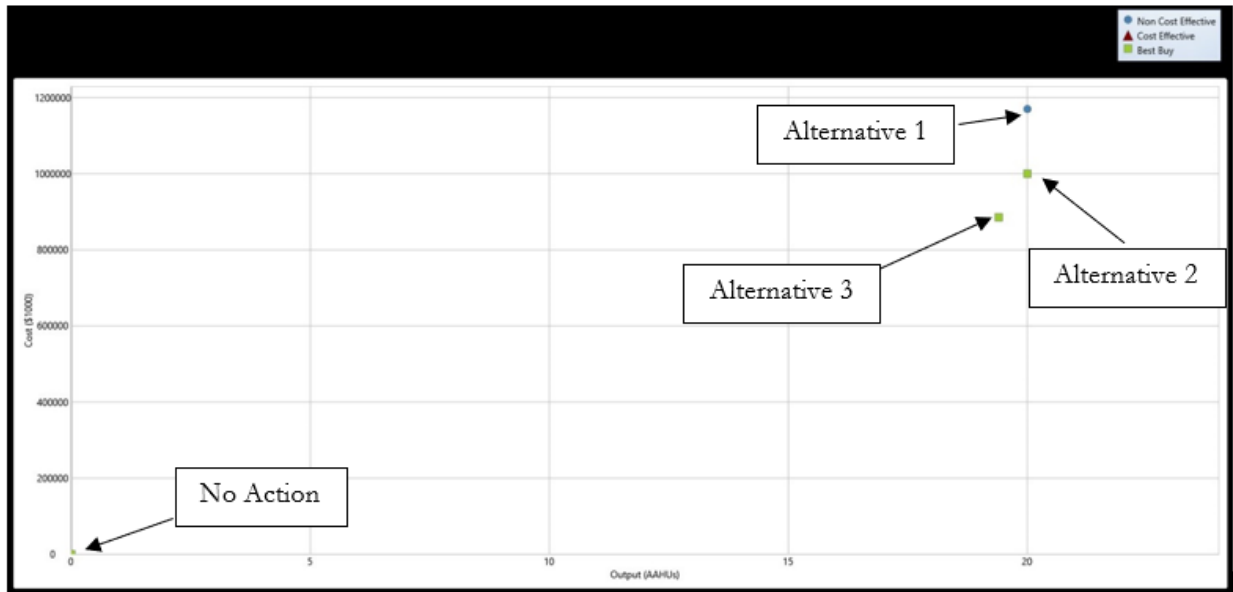


Figure 3 – Chart of Alternative Plans

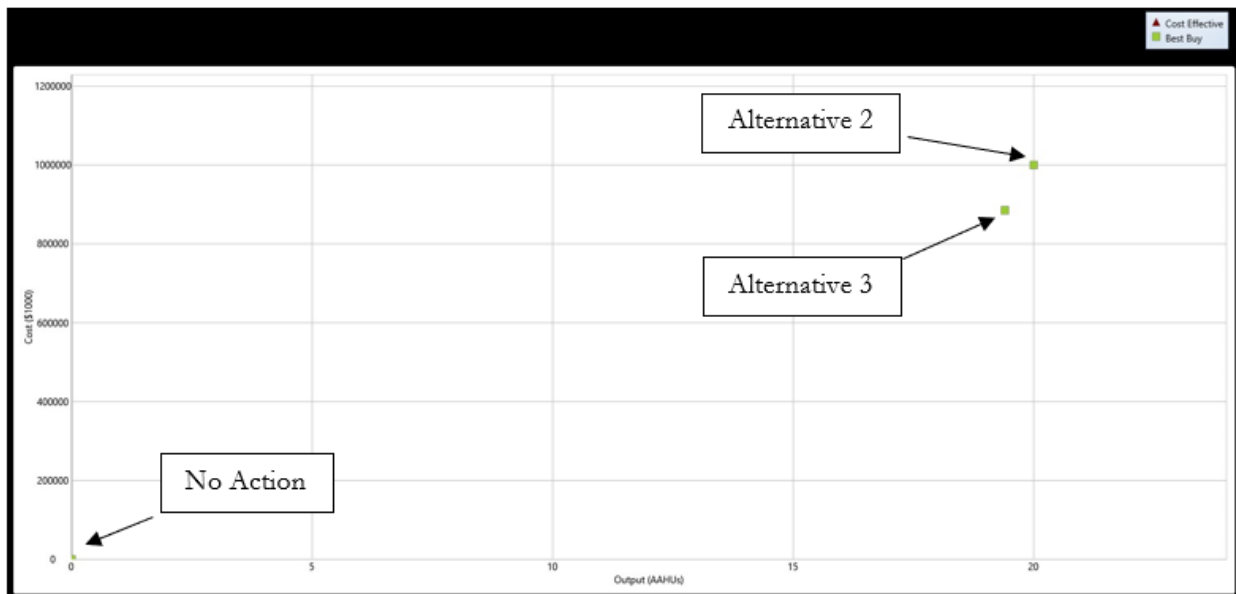


Figure 4 – Chart of Cost Effective Alternative Plans

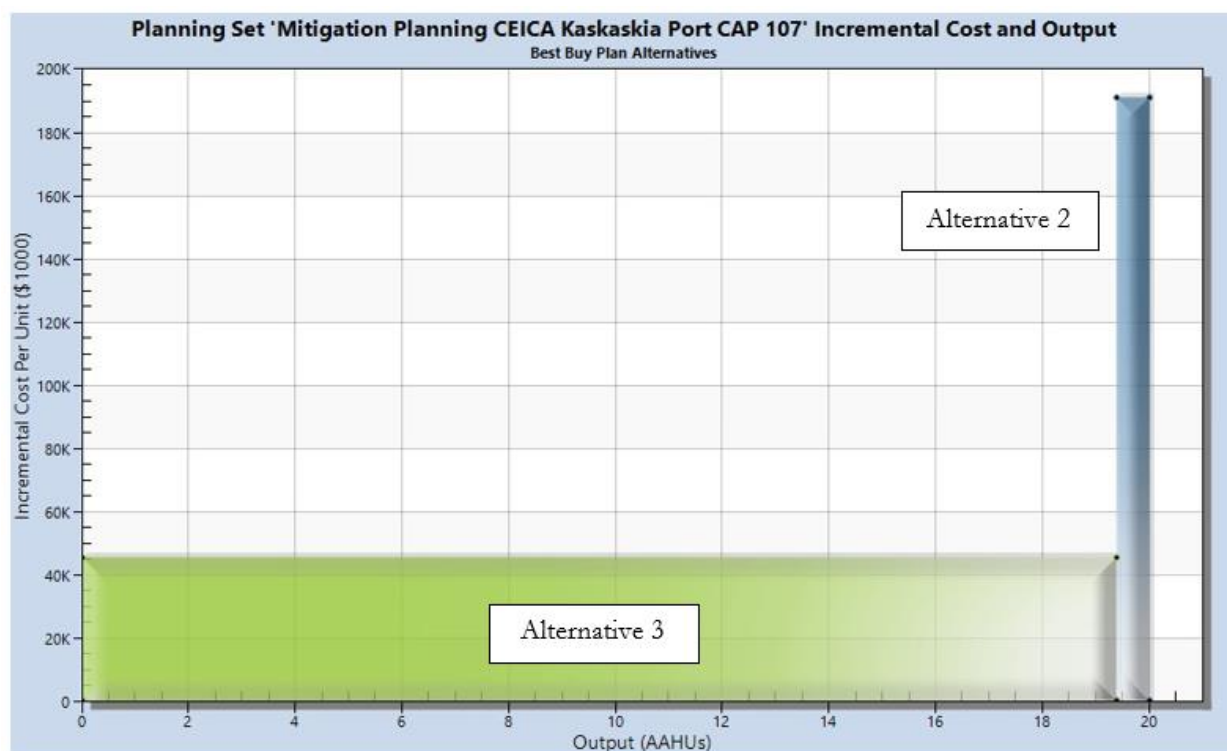


Figure 5 – Chart of Incremental Costs and Benefits of Alternatives

The least cost alternative plan, Alternative 3, that provides full mitigation of losses specified in the planning objectives is identified and displayed. There are no other plans that provide the same amount of benefits at a lower cost.

12.0 Plan Selection Considerations

Multiple formulation and plan selection considerations may be relevant to identifying a recommended alternative for the project. Factors to consider include compliance with laws, regulations and policies, location of work, a plan's cost effectiveness, implementation timing, and risk elements. The table below poses questions to consider selection factors for each alternative. In some cases, the considerations apply in comparison of one alternative to the others.

Table 8 - Plan Selection Considerations

Comparison Questions	No Action	Alt 1	Alt 2	Alt 3
Is the mitigation alternative located onsite?	No	No	No	No
Does the alternative mitigate for habitat losses in-kind?	No	Yes	Yes	Yes
Is the mitigation alternative in the same basin as the habitat impacts?	No	Yes	Yes	Yes
Can the alternative be implemented before or concurrent with construction?	No	Yes	Yes	Yes
Could the alternative be implemented faster than other alternatives?	No	Yes	Yes	No

Comparison Questions	No Action	Alt 1	Alt 2	Alt 3
Does the alternative have higher implementation risks than others?	No	No	No	Yes
Does the mitigation alternative have operation risks for the government?	No	No	No	Yes
Is the mitigation alternative cost effective?	Yes	No	Yes	Yes

The table above assesses each alternative plan by posing and answering a set of questions aimed at discerning differences in alternatives beyond simply identifying the least cost plan. Several questions are related to location and in-kind replacement of lost functions and values. These questions are linked to water resources law and policy that in most cases requires in-basin and in-kind mitigation. All alternatives provide in-basin and in-kind mitigation. The question regarding on-site mitigation could identify a preferable plan location but may have implementation timing implications. Laws requires mitigation work to be performed before or concurrently with project construction. All alternatives can be implemented before construction and none of the alternatives entail on-site compensatory mitigation. There are differences in risks between the alternatives. Constructing mitigation work versus purchasing mitigation credits or in-lieu fee credits carries risks of project non-performance that would have to be addressed by additional work at government expense. Based upon these considerations, Alternative 3, Corps-constructed mitigation, would be eliminated from further consideration. Alternative 2, purchasing in-lieu fee program credits, is the least cost and lowest risk plan.

13.0 Recommended Compensatory Mitigation Plan

The recommended plan for compensatory mitigation is to purchase in-lieu fee credits from an approved mitigation bank located in the basin. Specifically, credits will be purchased to compensate for the unavoidable loss of habitats in the lower Kaskaskia River basin as follows:

- 20 acres of Bottomland Hardwood Forest Habitat (6 average annual habitat units)

The Land Learning Foundation was contacted by U.S. Army Corps of Engineers on August 1, 2024 regarding availability of in-lieu fee credits. The credits needed for this project were available and ready for purchase. The bank operator is responsible for demonstrating and reporting that the bank's success criteria are being met. Therefore, no specific ecological success criteria are developed for this plan. A specific monitoring and adaptive management plan is not needed as these activities are the bank operator's responsibility (see Implementation Guidance for Section 1163 of WRDA 2016, Wetlands Mitigation).

15.0 Additional Mitigation Requirements

Bald Eagles (*Haliaeetus leucocephalus*) winter along the major rivers of Illinois and Missouri, and at scattered locations some remain throughout the year to breed. Perching and feeding occurs along the edge of open water, from which eagles obtain fish. The bald eagle was removed from the List of Endangered and Threatened Species in August 2007, but it continues to be protected under the Bald and Golden Eagle Protection Act and by the Migratory Bird Treaty Act. Recommendations to minimize potential project impacts to the bird and nests are provided by the U.S. Fish and Wildlife Service in the agency's National Bald Eagle Management Guidelines publication (U.S. Fish & Wildlife Service, 2018). No bald eagle nests were identified on a site visit February 2021, and review of the USACE Eagle Nest Site Database shows the closest known eagle nest to be 13.4 miles away from the study area (USACE, 2020).

Indiana Bat (*Myotis sodalis*), Northern Long-eared Bat (*Myotis septentrionalis*), and Tricolored Bat (*Perimyotis subflavus*) summer roost and foraging habitat may be located in the forested areas in the vicinity of the south oxbow. In order to minimize impacts to bat species, tree clearing would be restricted to the bat non-active period between 1 October and 31 March.

In stream construction work should not take place between March 1st and June 30th to avoid impacts to Pallid Sturgeon spawning and migration, as well as avoid the spawning time period for many spring spawning species.

16.0 References

Environmental Protection Agency. <https://www.epa.gov/wetlands/bottomland-hardwoods>. (EPA, 2024)

USACE. (2011). Engineer Circular 1105-2-412 Assuring Quality of Planning Models. Washington, D.C. 32pp.

USACE. (2019). Engineer Regulation 1105-2-100 Planning Guidance Notebook, Appendix C. Washington, D.C. 57pp.

USACE. (2020). MVS Borrow Tool Application, Eagle Nest Database. Retrieved from US Army Corps of Engineers.

Worthen, D. (2002). Kaskaskia River Watershed: An Ecosystem Approach to Issues and Opportunities. Illinois Department of Natural Resources RC&D, Inc. 9pp.

Additional References

Laws

- Clean Water Act (33 U.S.C. 1531 et seq)
- Endangered Species Act (16 USC 1531 et seq)
- Fish and Wildlife Coordination Act
- Magnuson – Stevens Fishery Conservation and Management Act (16 USC 1801 et seq)
- National Environmental Policy Act
- Water Resources Development Acts of 1986, 1990, 2000, 2007, 2014, and 2016.

Implementation Guidance

- Implementation Guidance for Section 2036(a) of the Water Resources Development Act of 2007 (WRDA 07) - Mitigation for Fish and Wildlife and Wetlands Losses. Issued by ASA(CW) 31 August 2009.
- Implementation Guidance for Section 1162 of the Water Resources Development Act of 2016 and Section 1040 of the Water Resources Reform and Development Act of 2014, Fish and Wildlife Mitigation (Section 906 of the Water Resources Development Act of 1986, as amended (33 U.S.C. 2283)) Issued by ASA(CW) 08 March 2019.
- Implementation Guidance for Section 1163 of the Water Resources Development Act of 2016, Wetlands Mitigation. Issued by ASA(CW) 08 March 2019.

Policy

- Cost Sharing for Lands Associated with Fish and Wildlife Mitigation. Issued by USACE Director of Civil Works 19 September 2006.

Regulations

- 40 CFR 230.92, definition of mitigation bank.
- 40 CFR 1500.3(b)(2), include alternatives input from State, Tribal and local governments.
- 40 CFR 1503.3(e), cooperating agencies must cite statutory authority to specify mitigation.
- 40 CFR 1508.5, definition of cooperating agency.
- 40 CFR 1508.20, definition of mitigation.
- Engineer Circular 1105-2-412 Assuring Quality of Planning Models.
- Engineer Regulation 1105-2-100 Planning Guidance Notebook, Appendix C.
- Engineer Regulation 200-1-5 Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers (USACE) Environmental Operating Principles (EOP) and Doctrine.
- Engineer Regulation 200-2-2 Procedures for Implementing NEPA.